Remarks

This is responsive to the Office Action of April 26, 2005, in which claims 1, 2, 5-16, 20-22, and 25-29 were finally rejected, and claims 3, 4, 17-19, 23, and 24 were object to as depending upon a rejected base claim. The latter claims were indicated to be allowable if appropriately rewritten in independent form.

The Examiner has rejected claims 1, 2, 5, 10, 12-15, 16, 20, 25 and 26-29 under 35 USC §103(a) as being unpatentable over Gerard et al (U.S. Pat. No. 5,689,330) in view of newly cited Lopes et al (U.S. Pat. No. 4,779,353). Claim 6 is rejected as being unpatentable over Gerard et al in view of Lopes et al and Ito (U.S. Pat. No. 5,146,688).

The disclosure of Gerard, the primary reference in all of the rejections, is distinguishable from the claims of the instant application in that the instant application relates to measuring the temperature of an inclinometer directly. This is done by measuring the electrical resistivity of the fluid in the inclinometer. On the other hand, the Gerard patent teaches using a thermister in close physical contact with the inclinometer to measure temperature. Gerard actually measures the temperature of the thermister, and Gerard then assumes that the thermister and the inclinometer are in sufficient thermal communication that their temperatures will be the same. The Examiner acknowledges this deficiency: He goes on to say: "However, detecting the temperature of the vial directly is well known. Lopes teaches a level vial which the temperature is measured directly through a connection to the level wires 35, 25, 30" (see column 13, lines 23-28). Therefore, it would have been obvious to modify Gerard to measure the temperature of the vial itself "for more accurate measurement of the level vial to generate a more accurate compensation signal."

A careful review of the Lopes patent, however, reveals that the inclinometer of Lopes differs significantly from the inclinometer of Gerard, and that it would not have been obvious to combine the teachings in the way suggested by the Examiner. The Lopes system uses an inclinometer which measures the resistance of several, generally vertical resistance wires having

their lower portions shorted out by an electrically conductive fluid. As the inclinometer is tilted, the resistances of the wires will change, since the electrically conductive fluid will short out varying lengths of the wires. An increased resistance in a wire indicates that a greater expanse of that wire is not shorted out by the conductive fluid, while a reduced resistance indicates that a lesser expanse of the wire is not shorted out by the conductive fluid. The Lopes inclinometer has an extra resistance wire to provide an indication of changes that result from temperature effects and from "changes in the electronic measuring system" (see column 8, lines 16, 17). The electrical resistance of this extra resistance wire, positioned down the middle of the inclinometer, is measured and used as a standard, since the length of the portion of this extra wire not shorted out by the conductive fluid remains constant, even though the inclinometer changes orientation. The Gerard reference, on the other hand, shows a circuit which measures the resistance of a path from each of a pair of electrodes through an electrically conductive fluid to a common electrode.

It would not be possible to substitute the inclinometer of Lopes for that of Gerard, and produce a working system. Further it would not be possible to add a resistance wire from the Lopes inclinometer to the inclinometer of Gerard. Neither approach would produce a workable device, and this inability to combine the inclinometers makes clear that it would not be obvious to do so. It is simply not obvious to combine the teachings of two references, any two references, in a way that results in an inoperative system.

The two inclinometers operate in completely different manners, and are not interchangeable. In Gerard, "Inclinometer 24 includes first and second spaced apart input electrodes 26 and an output electrode 28. An inclinometer drive circuit 30 applies a square wave signal across leads 32a, 32b connected with electrodes 26. An output signal taken from output electrode 28, which is a function of the direction and degree of tilt of inclinometer 24, is provided as an input to an inclination summer and amplifier circuit 34." The measured resistance paths are through the fluid in the inclinometer, from the electrodes 26 to the electrode 28. A resistive wire simply would not work in the inclinometer of Gerard to indicate temperature.

Further, since the inclinometer of Gerard does not have a central wire electrode, it would not be possible to measure wire resistance as a way of detecting the temperature of the inclinometer of Gerard. All of the prior art rejections share this same defect. It is submitted, for this reason, that all of the prior art rejections which have been made in this case based on the combination of Gerard and Lopes are untenable. Early notice of favorable action is respectfully requested.

Respectfully submitted,
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